MC 12.QAS

Program for Quality Registration for Microwave links

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Monitor bit error rate (up to 6,000,000 errors/second)
Separate monitoring of up to two channels with and without diversity

Output of: Total term
Available time
Error-prone seconds
10-3. Values
10-6 values

Protocol: Start and
Stop: Date and time
Change of day: Output of individual results
Turn of month: Output of last day's data
Output of the sum values of the total
Graphical output of the sum frequency
End: Output of last day's data
Output of the sum values (if there are several days)
Graphical output of the sum frequency

Additional: Program protection against BREAK
Intermediate stop of the measurement allowed as often as desired
Automatic termination of the measurement possible
Protection against drying out of the pens (daily change of color)
Constant display of the daily sum of both bit error channels on the display

The program enables the automatic recording and evaluation of the bit error rate on digital radio links. One or two channels can be recorded, with two channels also with diversity. The "available time", "error-prone seconds", the "10"3" and "10"6" values" are output daily. There is also a monthly overall evaluation with graphical output of the error frequency.

The program can be canceled by pressing a button. For the outputs, the colors of the plotter are changed cyclically.

1. Prepare your computer

a. Plug CE 161 (16k RAM module) into the PC-1500 A (see manual PCI 500 A p.142)
b. Mount computer, printer and MC-12 QA on common base plate
   - CE 150 slightly turned to the left with guide hole on base plate and turn to the right so that the hooks on the underside of the CE 150 in Base plate. Perform visual inspection!
   - Insert MC-12 QA into the BUS connector from above. With the included Secure knurled screws through the holes provided on the base plate.
c. Turn on the computer and enter 'NEW 0'.
d. Set the computer's internal clock.
   - (e.g. TIME = 51516.2006 corresponds to: 15. May, 16h 20m 06s)

2. Loading the program

a. With BASIC commands, the corresponding programs are loaded from the ROM installed in the MC12 QA into the free memory area of the 16k RAM/ROM module. The pointers of the BASIC interpreter are also changed accordingly.

RVSLOAD	Loading the normal FORTH interpreter
POSTLOAD	Loading FORTH interpreters and the quality registration program

(Forth interpreter from address &0000)
(BASIC part from address &3800)

The description of the normal FORTH program is given in the attached manual. The following pages describe the operation of the registration program.

After loading correctly, the program can be started with 'RUN'. The message 'PC-FORTH V1.1' appears in the display. The calculator is in FORTH mode. It is also in this mode after the evaluation has been aborted or if 'RUN' was entered again after 'BREAK' (only possible during input/output).

3. Direct measurement

The display shows the bit error pulses per second for both channels.

Start: Enter TEST', 'ENTER'

Display:

Time	Channel	1	2
15:11:54		12	36
h m s		s^{-1}	s^{-1}

End: Any desired

Output: OK

4. Main meter channel evaluation program

The sum of the bit errors since the last printout of the day appears in the display

Start: Enter 'POST' and start with 'ENTER'.

Entering the data:

a. Year (YYYY) ? e.g. 1986

The number entered will be taken into account in the date and at the turn of the year increased accordingly.

b. Measuring location?

c. Channels (1 o. 2) ?
   - 1: Only channel A is rated
   - 2: Channel A and Channel B are evaluated

d. Diversity (Y/N) ? (only if 2 channels are evaluated)
   - Y: Of the two channels A and B on the same route, the channel with the lower error rate is continuously included in the evaluation. In addition, the individual evaluations are running.
   - N: No diversity

e. Line parameters according to query.

Line and number are queried separately and for line number printed in two lines.

f. Start: Press ENTER

After pressing the 'ENTER' key, the start date is printed out and marked with bit error registration.

During measurements, the 'BREAK' button is blocked. During printer output, however, the 'BREAK' key causes the program to be interrupted. By 'CONT' the measurement can continue

g. Interruption and termination of the measurement

Intermediate stop: 'CL' key and then 'SPACE' key: The measurement is interrupted, and the date and time stops are logged on the printer.

Continuation: 'CL' button and then 'SPACE' button: At the change of day and month, the respective measurement report is output. It should be noted that in the case of a stop, the takes longer than a month, the output may not take place. Before resuming the measurement, the instantaneous Date and time printed.

Final evaluation: 'CL' button and then 'E' button: The measurement is stopped. An overall evaluation and, if necessary, a daily evaluation is carried out. After of these outputs, the computer is back in the FORTH Mode canceled by 'BREAK' or 'OFF' keys can be used.

Warning: For additional security, it is necessary to use the 'CL', Press 'SPACE' and 15' buttons for at least 2 seconds.

New start: TEST or POST

(h) Declaration of expenditure:

Date: The current date and time is always displayed.
Example: Date:23.05.86 Time:00.00.05
Evaluation for 22.05.86.

The line number and measured value are output in order to allow protocols to be mapped.

Additional expenses:

MT: Total measurement time in seconds for this channel (MT=NV+MA)
ES: Error seconds in MA
NAS: Seconds when the system was unavailable
MA: Seconds in which the system was available
SES: Seconds with more than 64*MF/VF-1 errors in MA
DM: minutes with more than 4*MF/V*F-1 errors in MA

It is always the absolute number and in brackets the corresponding percentages based on the total measurement time.

Distribution: Graph of the sum frequency in double log. Representation.
Ordinate: Number of bit errors BFI/s
Abscissa: Time percentage P%

9. Sample overall evaluation

Auswertung des letzten Tages :

Datum:00.02.08 Zeit:00.00.05

Kanal : 1
Leitungsnummer : Test mit Frequenzen.
Endstellen-Sender : 208LTPC
Ressort : Puchheim

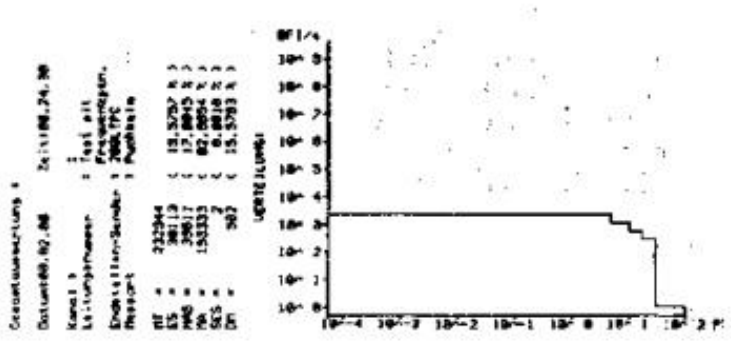
MT =	98236	
ES =	12858	(100.0000 %)
NRS =	17377	(57.4712 %)
NA =	12859	(42.5287 %)
SES =	2	(0.0155 %)
DM =	214	(99.0522 %)

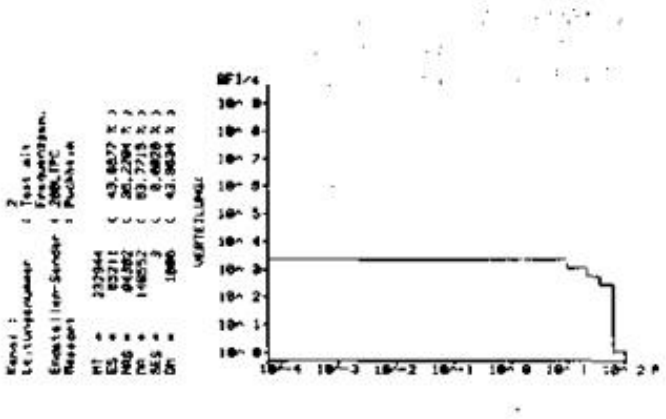
Kanal : 2
Leitungsnummer : Test mit Frequenzen.
Endstellen-Sender : 208LTPC
Ressort : Puchheim

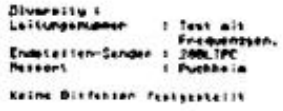
Keine Bitfehler festgestellt

Diversity :
Leitungsnummer : Test mit Frequenzen.
Endstellen-Sender : 208LTPC
Ressort : Puchheim

Keine Bitfehler festgestellt







Diversity :
Leitungsnummer : Test mit Frequenzen.
Endstellen-Sender : 208LTPC
Ressort : Puchheim

Keine Bitfehler festgestellt

Diversity: _____